



GES DISC Web-based Services

Chris Lynnes



Web-based Services Agenda

- What we currently offer and why
- What we do not yet offer and why
- Discussion on future directions



Overall Background

- Why data services?
 - Requests to Help Desk for certain services
 - ACSI comments asking for similar services
 - Interaction with user community at meetings, etc.
- Most Common Requests:
 - Subsetting, NetCDF format, ASCII format, GeoTIFF format, GIS-friendly format
- Less common: OPeNDAP, WCS
 - Mostly industrial-strength users



Subsetting Services

- What is the Subsetting Service?
 - Extraction of part of file (space, parameters,...)
 - Offered through HTTP URL
 - Output is same format as original
- Why? Reduce data volume
 - International users (saves bandwidth)
 - Scientists using lots of data (easier to manage)
- Types of subsets
 - Parameter subsets (e.g. AIRS Level 2)
 - Channel subsets (AIRS Calibrated Radiance)
 - Spatial + Parameter (OMI Level 2G, MERRA)

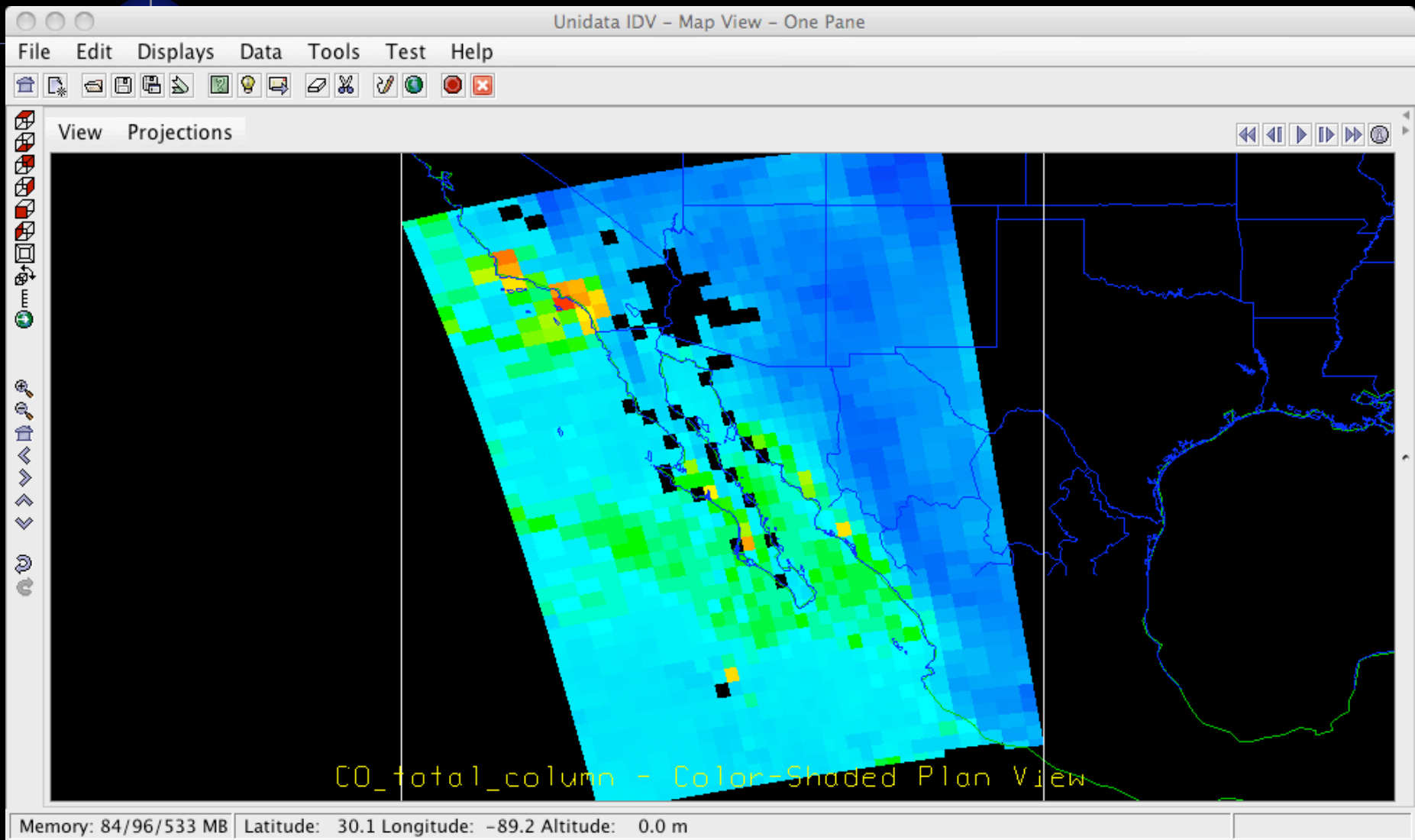


NetCDF Format Conversion

- What is NetCDF?
 - A platform independent data format similar to HDF
 - Often accompanied by conventions for representing data structures and dimensions (CF1, COARDS), analogous to HDF-EOS
- Why NetCDF?
 - Use data transparently in analysis and visualization tools
 - Especially for presenting data in a geographical context, if it follows CF1/COARDS conventions
 - Example...



Example: NetCDF in IDV



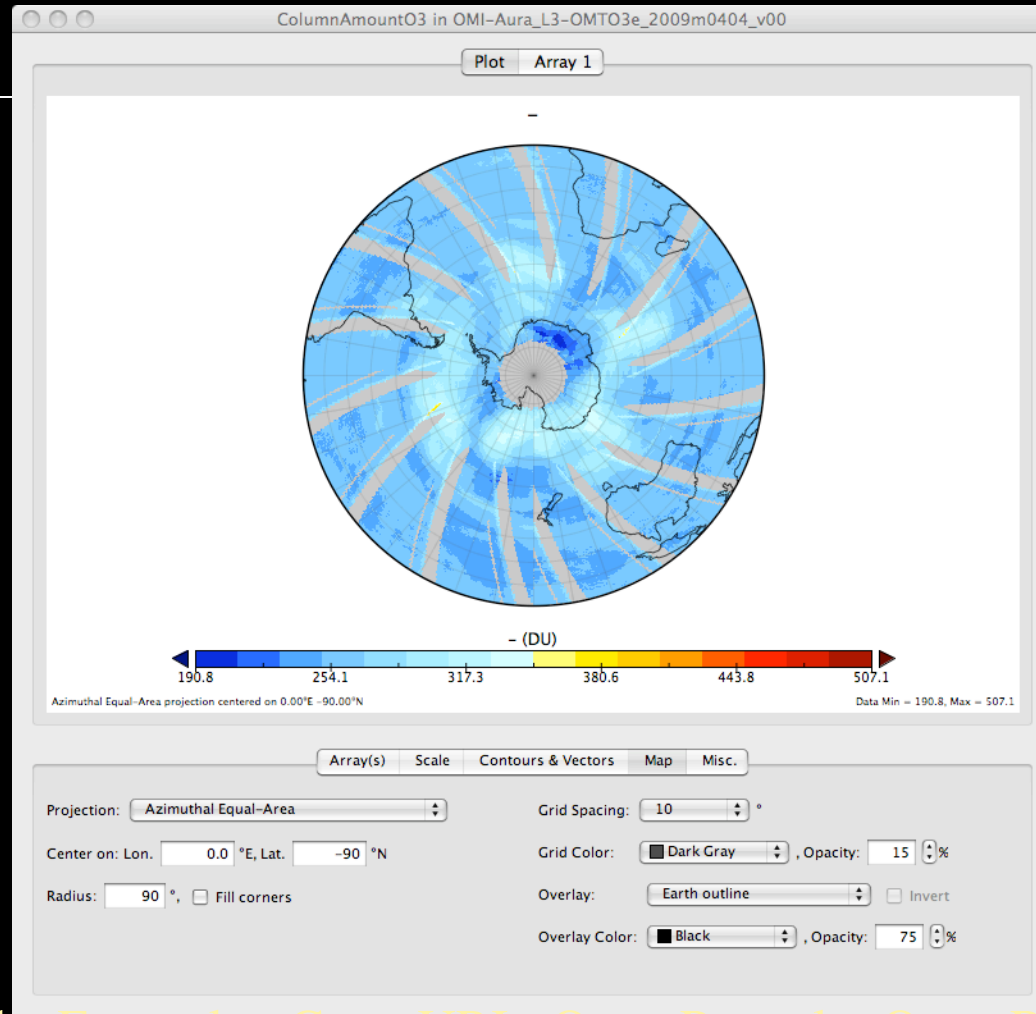


OPeNDAP

- What is OPeNDAP?
 - Data access / transfer protocol
 - NASA-approved standard
- Why?
 - Capabilities similar to NetCDF for HDF5
 - New feature: download data as a NetCDF file
 - Similar capabilities for HDF4 in development at NCSA
 - Existing industrial-strength users
 - Internal infrastructure support (Giovanni)
- Example...



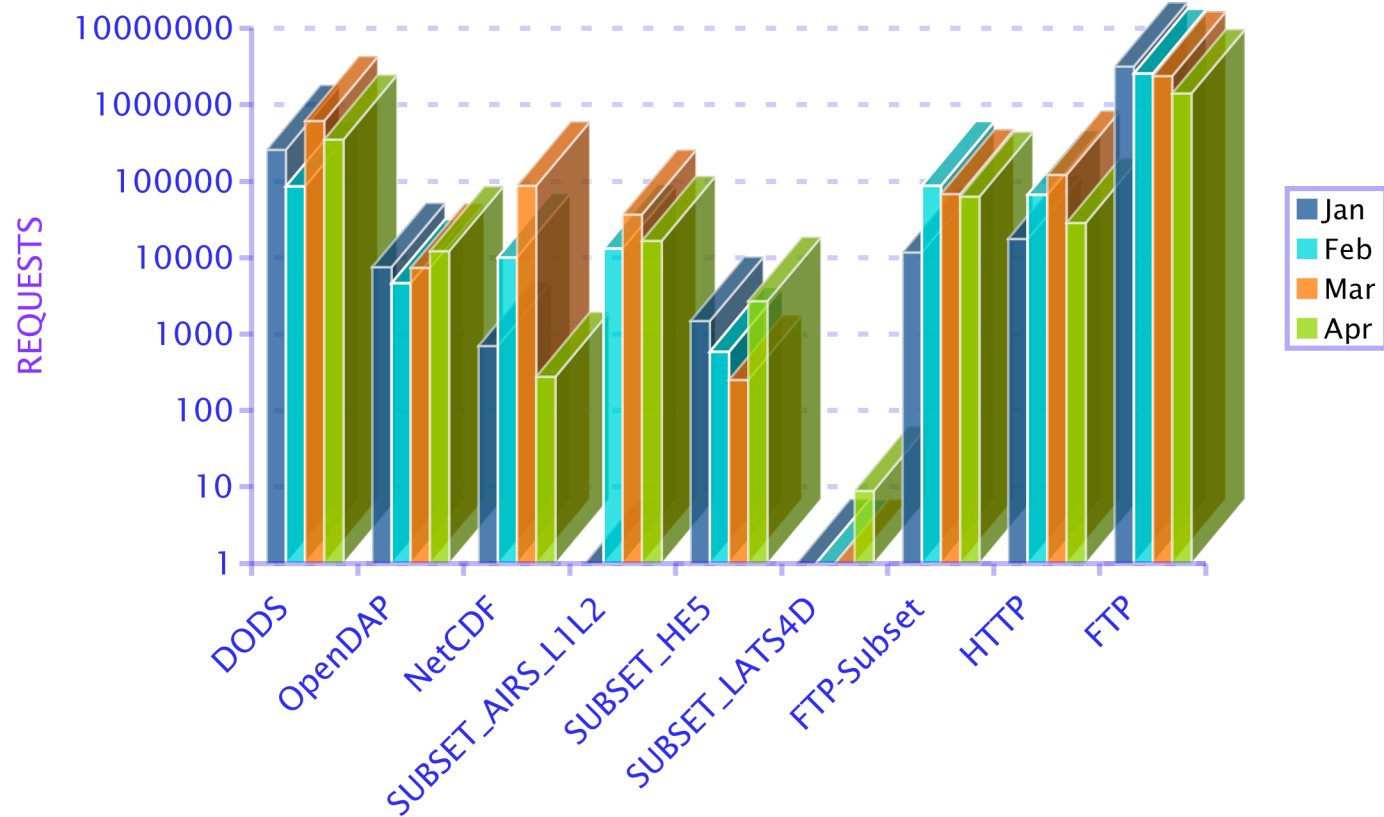
Access via OPeNDAP



Quick Intake Example: Copy URL, Open Panoply, Open Remote File..., Paste URL, Click Load, Double-click ColumnAmountO3 -> Plot



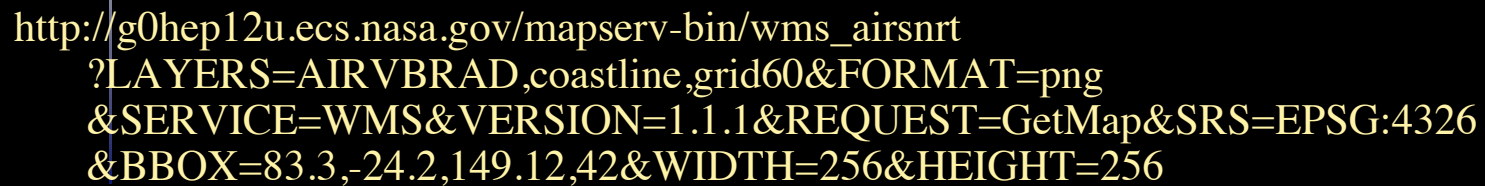
Recent Metrics





Web Map Service

- What is Web Map Service?
 - Web-based protocol from Open Geospatial Consortium (OGC)
 - Provides map images of data
- Why WMS?
 - Quick exploration of data
 - Support for applications
 - Underlying infrastructure for Keyhole Markup Language offering
 - Future: infrastructure for browse?
- Example...





Keyhole Markup Language

- What is Keyhole Markup Language?
 - XML file pointing to map image (can be WMS URL)
 - Used by GoogleEarth
 - Now an OGC standard
- Why KML?
 - Google Earth is a popular data exploration interface
 - Occasional lightweight analysis



Web Coverage Service

- What is Web Coverage Service?
 - OGC protocol for transmitting mapped data (numbers)
 - Typically implies reprojection
 - Currently offered for OMI UVB
- Why WCS?
 - Requested by DataFed (Air Quality site)
 - Includes geographic context



Machine-Callable Services

- What?
 - Service that is callable from a script or other program
 - User interface not required
 - Usually accessible via URL
- Why?
 - Scientist scripters (e.g., UMBC)
 - Interoperability with other systems (e.g., DataFed)



Catalog of Machine-Callable Services

- OPeNDAP
- Subsetting
- NetCDF
- Mirador search
- WMS & WCS
- Machine Request Interface (for accessing restricted data)
- Giovanni...to be discussed later



What We Don't Yet Offer

- GeoTIFF
 - Ambiguity between raster-based and numerical GeoTIFF
 - Requires reprojection of swath data
- WCS for everything
 - Few clients, uncertain user community
- WMS for everything
 - Uncertain user community
- Subsetting for everything
 - Currently based on requests
- NetCDF for everything
 - Time-consuming to create software for CF1
 - Examining less costly options...
- Other Services?



Advertising Our Services

- Announcements on Web + in Mirador
- Email (occasional)
 - Messages to mailing lists, e.g. IDV, GrADS
- Registries (just a little)
 - GCMD DIFs and SERFs
 - GEOSS Services Registry
 - ECHO Registry
 - ESIP Servicecasting
- How best to advertise? How much?



Discussion

- Questions:
 - Which services should be added?
 - Which services should be expanded to more datasets?
 - Should more be done to advertise services?
- Considerations
 - Current user community
 - Potential community expansion
 - Future interoperability with other systems



Backup Slides



GES DISC Interoperability Architecture

